

NOTES ON LONG-EARED HEDGEHOG *HEMIECHINUS AURITUS* (GMELIN)¹

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(With a text-figure)

Key Words: hedgehog, sex ratio, body-weight, nurseries, litter-size

The Long-eared Hedgehog *Hemiechinus auritus* (Gmelin) is a nocturnal mammal found in the arid and semi-arid areas of Rajasthan. A study was conducted at World Forestry Arboretum, Jaipur, on the biology and behaviour of *H. Auritus* between June 1989 and June 1991. Male-female sex ratio in adults was nearly 1:1. The mean weight of the adult females (306.2 gms) was slightly more than that of adult males (256.6 gms). Their breeding coincided with the rainy season and the Young are born in burrows. Litter size varies from 1-2. The female alone takes care of the young. The young are born blind and without spines. Later the mother escorts her babies during night rounds. The young become independent before commencement of summer. Hedgehogs are destroyed in various ways in Rajasthan. We can save them only by creating awareness among the public.

INTRODUCTION

The Long-eared Hedgehog *Hemiechinus auritus* (Gmelin) is a nocturnal spiny small mammal, widely distributed and known in the state of Rajasthan by vernacular names such as 'Jhaoo-chuha', 'Jhaoo-musa', 'Jhaoo', 'Jhawla', 'Bhuinthda', 'Dhuan-dhuan', 'Gao-ghota', etc. It is mostly confined to arid and semi-arid portions of the state. Very little is known about the breeding biology and other habits of this animal. In this paper, these aspects of this species are described.

STUDY AREA

The present study was mainly conducted at the World Forestry Arboretum (Part A), Jaipur, confined to an area of 1.45 sq. km. The arboretum is situated on the outskirts of Jaipur city between National Highway (Bye Pass) No. 8 and Jhalana hills.

This place receives an annual rainfall of 548 mm. The maximum rainfall is received during July and August. The average relative humidity is 58.6 percent. The temperature ranges from 2° C to 44° C (av. 23°C). Eastern part of the arboretum is hilly but aeolian (soil transported by wind) sand deposit is confined to the foothill zone with *Leptadenia*

pyrotechnica, *Calotropis procera*, *Saccharum bengalense*, *Mytenus emarginata*, etc. The sandy tract of the arboretum provides an ideal habitat to the Long-eared Hedgehog.

MATERIALS AND METHODS

Observations were taken from June 1989 to June 1991. Long-eared Hedgehogs were captured during night time. Two of our night-watchmen rendered their services for the purpose. From July to October, intensive night surveys were made to capture the animals. All the captured animals were sexed, marked and freed after weighing. To give a particular code number, tips of spines of cephalic and lumber regions were cut using scissors. Each year a fresh marking was practiced.

Pit digging and planting are two major operations in the forest areas during rainy season. While doing these operations in the arboretum, all the officials and labourers were requested to note and inform about nurseries of Long-eared Hedgehogs, when encountered.

Foraging individuals were captured after dusk and before dawn. No animal was found naturally wandering in the day time. Bagged animals were weighed on a portable dial balance in the field to avoid any loss in body weight of animals due to exertion and starvation.

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RESULTS

Breeding: Data on animals caught are given in Table 1. It suggests that the breeding period of the animal coincides with the rainy season, i.e. June to September. It can also be concluded from Table 1 that during winters, to escape severe cold, the animals probably hibernate. During the months of October and November, when cold is not severe, few wandering animals were observed in the night; but, from December to February, which are the severest months of the winter, not a single animal was observed in the field. This suggests that they probably hibernate, become lethargic during the severely cold months. Prater (1980) has suggested this possibility. It can also be deduced from Table 1 that 1 to 2 young are found in a litter. Interestingly the litter size is very small in comparison to the five pairs of teats present. Early infant mortality may be one of the reasons, for the recorded litter size.

At the time of birth, the young are blind and lack spines. During infancy, babies have flexible spines on their dorsal and lateral sides. As the young grows, the spines stiffen. Initially a fairly good number of spines seemed white in colour but gradually became shiny black. Except light coloured whiskers on snout, the head, chin, throat, limbs, ears and ventral side generally lacked hairs. The bare skin of these parts are pinkish in colour. Pinnae were proportionally smaller in infants. As they grow, size and erectness increases in pinnae and a fold develops on lower edge of each pinna at adulthood. When 'ball' formation takes place, this fold helps the animal to adjust the long ears in the minimum of space.

Though adult individuals have a pointed pig-like snout, the newly born do not have this character. Their snouts are almost blunt having roughly equal sized upper and lower jaws while in adults the upper jaw projects far beyond the lower jaw. The blunt snout of the baby hedgehog could be an adaptation for suckling. As the young grows, the snout gradually tapers and ultimately becomes pointed in adulthood.

Parental Care: The young are born in burrows. It was general observation shows that

wherever the nursery of a female was disturbed, it abandoned its burrow with its new born as early as possible. The young are transported by the mother at night only. She carries them by gripping the loose skin of the side of neck or body

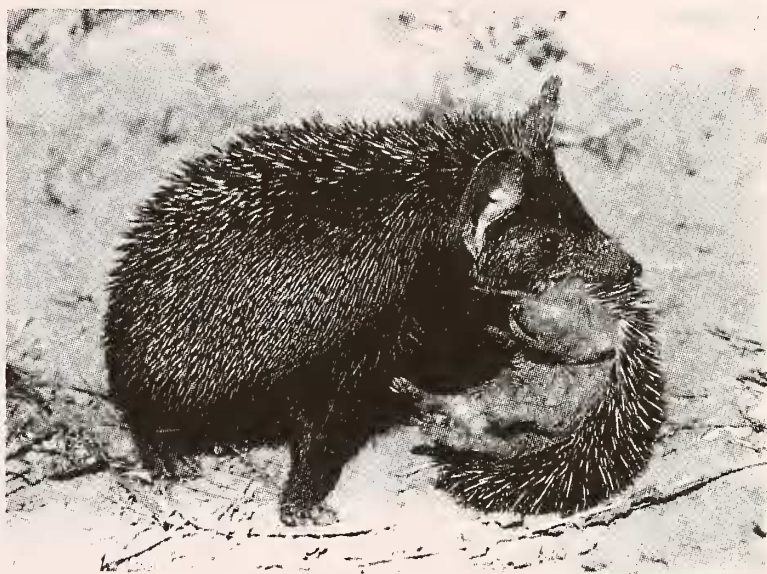


Fig. 1. A female Hedgehog transporting her young.

(Fig. 1).

When the young are separated from their mothers, they make a shrill sound. When a foraging mother returns to her burrow and senses something unusual (like the presence of an observer in a hide near the burrow) she may wait among the thickets till she is assured that there is no danger near the burrow. She may even remain away from her young for a whole day and a night or even more, as is evident by the behaviour of the female C-6-1990. The activities of the female are given in Table 2.

During September 1990, an adult female and two small sized young were found run over in the morning on the bye-pass road bordering the arboretum. They had been run over during the night and their bodies had become flat. All the carcasses were roughly in a straight line, parallel to the road. Heads of all the three individuals were facing south. Interestingly, corpses of both the young ones were behind the mother. All three dead animals were confined to a 40 cm x 20 cm area. An almost similar incidence was observed in October 1990. These observations led to the assumption that after the eyes are open, the young hedgehogs follow the mother at

TABLE I
MONTH-WISE DATA ON LONG-EARED HEDGEHOGS IN WORLD FORESTRY ARBORETUM, JAIPUR.

Season	in field while wandering in night					No. of animals captured		No. of individuals					
	Solitary			Female with young	Solitary young	No. (mother+ young)	frequency in burrows	found dead in water tanks*			found run over on road		
	adult male	adult female	adult male					adult female	Solitary young	Solitary male		Solitary female with youngs	
Rains (June 1989 to Oct. 1989)													
	4	1	1+2	1	—	1+2	1	—	—	—	—	—	—
						1+1	1						
Winters (Nov. 1989 to Feb. 1990)													
	—	—	—	—	—	—	—	—	—	—	—	—	—
Summers (March 1990 to May 1990)													
	2	1	—	—	—	—	—	—	—	—	—	—	—
Rains (June. 1990 to Oct. 1990)													
	7	—	1+2	1	—	1+2	3	1	1	1	—	1+2	2
			1+1	1		1+1	1						
Winters (Nov. 1990 to Feb. 1991)													
	2	3	1+1	1	3	—	—	1	—	1	—	—	—
Summers (March 1991 to May 1991)													
	3	2	—	—	—	—	—	—	—	—	—	—	—
Total	18	7	4+6	—	3	6+10	—	2	1	1	1	2+4	—

* Animals found dead in different tanks on different dates. (Sex of adults only have taken into consideration).

TABLE 2
DEPARTURE AND RETURN TIMINGS OF DISTURBED FEMALE HEDGEHOG C-6-1990

Date	Time of departure from burrow (hrs)	Time of return to burrow (hrs)	Time of stay in burrow (minutes)	Time of stay outside burrow (minutes)	Observations
14.9.90	1905	2031	--	86	--
	2035	--	4	--	Carried one young.
15.9.90	--	--	--	--	Not returned to burrow at all.
16.9.90	--	0615	--	2020	--
	0618	--	3	--	Carried another young.

night. During night surveys 'Caravans' of Hedgehog families captured in groups of 1+1 or 1+2, with the mother leading the juveniles, substantiates this fact (Table 1).

During November 1990, three solitary young of the current year were captured wandering at night. One solitary young was also found dead in a water tank. Before June and after December no female was captured with young. These observations suggested that the young hedgehogs become independent before the summer of the same year.

Sex ratio and body weight: A total of 35 adults and 13 young ones were weighed in the field. The mean weight of adult females (306.2 gm, n=17) was slightly more than that of adult males (256.6 gm, n=18). The adult sex ratio was nearly equal. The blind young ones about to open the eyes in burrows weighed only about 60.1 gm (n=10) while the independent young hedgehogs weighed 125.2 gm (n=3).

Destruction of hedgehogs: A considerable number of Long-eared Hedgehogs are destroyed in Rajasthan every year. It is believed by rural people that hedgehogs are rat-destroying animals, hence they are transported to houses from fields. Due to their removal from the fields, many mothers get separated from their new born. It is obvious that the young cannot survive without their mothers. Similarly, there is a practice among rural people to fumigate the Cucurbitaceous climbers, like *Luffa acutangula*, *L. cylindrica*, *Benincasa hispida*, etc., by burning the skin and spines of Hedgehogs to induce heavy fruiting. Hedgehogs are killed for medicinal purposes also. During epidemics of foot and mouth disease of cattle, it is a general practice

in many parts of Rajasthan, specially in the southern part, to bury a live hedgehog in a pit in front of each house. Cattle are then passed over the pit.

During nights, wandering Hedgehogs may stumble in wells and tanks that are without parapet walls (Sharma 1993). Many are runover by vehicles (Sharma 1988, 1992).

Conservation measures: Hedgehogs play an important role in destruction of insects and even rats and mice (Sinha and Ray 1983), hence they should be protected. A considerable number of hedgehogs are killed in rural areas. "Gram-Sewak" — an 'agricultural guide' in rural areas can educate farmers and agricultural labourers by teaching them about the role played by the hedgehogs and other wild animals in an agro-ecosystem. Agriculturists should be advised not to bring the hedgehogs, specially females, to the home, atleast during breeding season. The children's science books may also have a chapter on these animals which are beneficial to our agriculture.

Raising of parapet walls around wells and tanks on agricultural land avoids the falling of stumbling hedgehogs and other nocturnal animals into them. Vehicle drivers should be careful of animals crossing the roads.

CONCLUSION

It can be concluded from the present study that female hedgehogs are slightly heavier than males. Sex ratio among adults is nearly 1:1. Young ones are given birth in burrows during rainy season when

grass cover and plenty of insects are available. Litter size varies from 1 to 2. The female alone takes care of the young ones. If a nursery of a female is disturbed, she transports her young one by one to another safer place during the night. Babies are transported by her by gripping the loose skin of the neck or body as members of the Cat family do.

A large number of hedgehogs are destroyed in Rajasthan every year for domestic uses. These animals cannot be saved without creating awareness in public.

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